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(yellow pigments of the cell sap) than are plants grown on the plains. They believe that these pigments protect the mountain plants against the high insolation (especially actinic rays) of their habitat. Contrary to KERNER, they believe that anthocyanin in the foliage of mountain plants has little protective significance against light, for it develops mainly in the autumn after the light intensity has fallen. They consider the anthocyanin in foliage organs as originating by the reduction of the flavone bodies and thereby offering a problem in cell physiology, rather than being of physiological significance. They do not deny that anthocyanins of the brilliantly colored mountain flowers are of significance as light screens. They also emphasize the protective function of flavone bodies in the white and yellow flowers. The mountain plants show a great reduction in flavone content when they are grown on the plains. For a general statement of the chemical side of this problem the reader is referred to a recent review upon anthocyanins.¹⁶—WILLIAM CROCKER.

Morphology of *Isoetes japonica*.—WEST and TAKEDA¹⁷ have investigated this species, rather widely distributed in Japan, and the largest species of the genus known, the stem ("caudex" of the authors) of an old plant often attaining 4 cm. in diameter, and in very large specimens a diameter of 8 cm. may be reached. The trilobed caudex consists of two distinct structures, stem and rhizophore, to which the leaves and roots are attached respectively, but on account of the stunted growth all external morphological differentiation between the two organs is lost. The stem apex is a conical mass of tissue at the base of the funnel-shaped depression in the cortex, and in this protuberance no apical cell can be distinguished. The primary vascular axis is "a non-medullated monostele," and no secondary xylem is formed in this species. The rhizophore, a distinct root-bearing organ, is regarded in *Isoetes* "as an organ *sui generis*." The anatomy of stem, rhizophore, and leaf is described in detail. The authors conclude that *Isoetes* "occupies an isolated position amongst recent vascular cryptogams, and is regarded as the sole living representative of the class Isoetales."—J. M. C.

Permeability.—FITTING¹⁸ finds the plasmolytic method rather serviceable for studying the intake of salts by the cells of various plants, especially *Rhoeo discolor*, which was used mainly in the investigation. Permeability to salts of alkali metals (K, Na, and Li) is rather great. It varies with the leaf and is greatest in summer and very slight in winter. The permeability for sodium and potassium salts was about equal and for the lithium salts considerably lower. The permeability was largely determined by the anion, the sulphate

¹⁶ BOT GAZ. 61:349-352. 1916.

¹⁷ WEST, CYRIL, and TAKEDA, H., On *Isoetes japonica* A.Br. Trans. Linn. Soc. London 8:333-376. pls. 23-40. figs. 20. 1915.

¹⁸ FITTING, HANS, Untersuchungen über die Aufnahme von Salzen in lebende Zelle. Jahrb. Wiss. Bot. 56:1-64. 1915.